guide to all those who are faced with having to come up with numerical answers to multiple-integration problems.

W. G.

1. S. HABER, "Numerical evaluation of multiple integrals," *SIAM Rev.*, v. 12, 1970, pp. 481–526.

2. I. M. SOBOL', *Multidimensional Quadrature Formulas and Haar Functions*, Izdat. "Nauka", Moscow, 1969. (Russian).

3. I. P. MYSOVSKIKH & V. IA. CHERNITSINA, "Answer to a question of Radon," *Dokl. Akad. Nauk SSSR*, v. 198, 1971, pp. 537–539. (Russian)

15[5, 13.05, 13.15].—G. DUVAUT & J. L. LIONS, *Les Inéquations en Mécanique et en Physique*, Dunod, Paris, 1972, xx + 387 pp., 25 cm. Price 118 Fr.

Important advances in "classical" mathematical physics have been made in the last two decades, due to the consistent application of new techniques in studying partial differential equations. The book under review is a contribution in this direction. For the most part, the text is concerned with providing rigorous proofs of existence and uniqueness theorems for certain classes of partial differential equations of continuum mechanics that have inequalities as boundary conditions. The authors have made some effort to explain the physical meaning of these problems as well as to provide some context for the methods of functional analysis and Sobolev spaces used to solve them. The diverse areas discussed include the equations of plasticity and (linear) elasticity, non-Newtonian (Bingham) fluids, and boundary value problems for Maxwell's equations, among others.

The book consists of seven chapters that can be read independently. In each chapter, various physical problems are formulated in terms of partial differential equations and boundary conditions and then shown to possess "generalized solutions." A reader cannot help but admire the virtuosity of the authors, yet he is left in doubt concerning the deeper aspects and implications of the subject.

A sequel on numerical methods for the problems considered is promised in the near future.

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16[7].—LUDO K. FREVEL, *Evaluation of the Generalized Error Function*, Department of Chemistry, The Johns Hopkins University, Baltimore, Maryland. Ms. of 8 typewritten pp. deposited in the UMT file.

The author tabulates to 5S (unrounded) the "natural" error function

$$϶(x) = \frac{1}{\Gamma(1 + 1/\nu)} \int_0^x e^{-t^\nu}\, dt$$

for $x = 0(0.01)2$, where the constant ν is determined by the condition that $1/\nu$ is the abscissa of the main minimum of $\Gamma(1 + x)$. Thus, $\nu = 2.166226964$ and $1/\Gamma(1 + 1/\nu) = 1.129173885$ to 9D, as the author correctly states. This choice of ν was apparently motivated by the fact that the error function then exceeds for any specified positive argument x the corresponding value for any other choice of a positive value of ν, as, for example, $\nu = 2$, yielding the normal error function.

The underlying calculations were initially performed on an IBM 370 system and then repeated on a Wang Model 360 calculator. The final computer results were checked to 9S prior to truncating to 5S.

No applications of this unique table are mentioned or suggested.

J. W. W.

17[7].—L. K. FREVEL & T. J. BLUMER, *Seven-Place Table of Iterated Hyperbolic Tangent*, The Dow Chemical Company, Midland, Michigan, 1972. Ms. of 43 pp. deposited in the UMT file.

The nth iterated hyperbolic tangent is herein tabulated to 7D for $n = 0(0.1)10$ and argument u over the range $u = 0(0.02)3$. All tabular entries were originally calculated to 9D on an IBM 1800 system, prior to rounding to 7D; accuracy is claimed to within a unit in the last tabulated decimal place.

Details of the procedure followed in calculating the table are presented in a three-page introduction, and reference is made to related unpublished tables of iterated functions prepared by the senior author and his associates [1], [2], [3], [4].

A useful figure is included in the text, consisting of an automated plot of the iterated tangent over the tabular range of u and for 30 selected values of n.

J. W. W.

1. L. K. FREVEL, J. W. TURLEY & D. R. PETERSEN, *Seven-Place Table of Iterated Sine*, The Dow Chemical Company, Midland, Michigan, 1959. [See *Math. Comp.*, v. 14, 1960, p. 76, RMT **2**.]
2. L. K. FREVEL & J. W. TURLEY, *Seven-Place Table of Iterated* $\mathrm{Log}_e(1+x)$, The Dow Chemical Company, Midland, Michigan, 1960. [See *Math. Comp.*, v. 15, 1961, p. 82, RMT **3**.]
3. L. K. FREVEL & J. W. TURLEY, *Tables of Iterated Sine Integral*, The Dow Chemical Company, Midland, Michigan, 1961. [See *Math. Comp.*, v. 16, 1962, p. 119, RMT **8**.]
4. L. K. FREVEL & J. W. TURLEY, *Tables of Iterated Bessel Functions of the First Kind*, The Dow Chemical Company, Midland, Michigan, 1962. [See *Math. Comp.*, v. 17, 1963, pp. 471–472, RMT **81**.]

18[7].—DUŠAN V. SLAVIĆ, "Tables for functions $\Gamma(x)$ and $1/\Gamma(x)$," *Publ. Fac. Elect. Univ. Belgrade* (*Série*: *Math et Phys.*), No. 357–No. 380, 1971, pp. 69–74.

The two main tables in this publication (No. 372) consist of 30D values of $\Gamma(x)$ and its reciprocal for $x = 1(0.01)2$, as calculated on an IBM 1130 system. A third table gives to the same precision the "principal value" of $\Gamma(-n)$, that is

$$(-1)^n\psi(n + 1)/\Gamma(n + 1),$$

for $n = 0(1)30$.